

10/580736

AP20 Rec'd PCT/PTO 25 MAY 2006

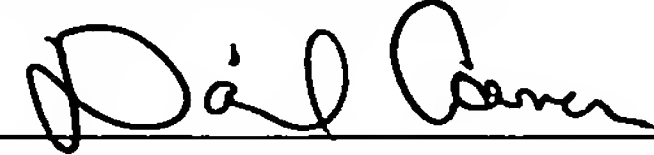
PCT PATENT APPLICATION COVER SHEET

Attorney Docket No. 1991.75205

*I hereby certify that this paper is being deposited  
with the United States Postal Service as Express Mail  
in an envelope addressed to: Mail Stop PCT;  
Commissioner for Patents, P.O. Box 1450,  
Alexandria, VA 22313-1450 on this date:*

5-25-06

Date



Express Mail No.: EL846180552US

COLLAPSIBLE TENTPOLE

Inventor: KIM, Ki-Bong

GREER, BURNS & CRAIN, LTD.  
300 South Wacker Drive, Suite 2500  
Chicago, Illinois 60606  
Telephone: (312) 360-0080  
CUSTOMER NO. 24978

1991.75205

## COLLAPSIBLE TENTPOLE

### FIELD OF THE INVENTION

The present invention generally relates to tent fittings, in particular, to a collapsible tentpole.

### BACKGROUND OF THE INVENTION

In the conventional art, a well-known collapsible tent structure is shown in Figure 1, it comprises canvas 2' or other material stretched and sustained by poles 1' and a tarpaulin 6' covering the tent disposed in the top. With reference to Figure 2, every pole 1' is composed by several shafts connected by insertion into each other. In order to achieve the inter-insertion, a sleeve tube 3' is secured to every shaft, and an elastic cord 4' is arranged in the shafts with both ends secured to the two endmost shafts. When folding the tent pole, as referenced to Figure 3, the shafts are separated and folded from a long pole position into a short position.

However, when the shafts of the poles 1' are folded, the elastic cord 4' turns to be exposed to the outside of the pole, as a result, during the erection or transportation of the collapsed shafts, the elastic cord 4' may easily get abrasion or break by the external or gravity force. Especially when the collapsed shafts fall onto the ground uprightly, in this case the weight of the shafts directly apply on the elastic cord 4', which makes the elastic cord 4' break down more easily. In addition, some metal shafts have thin walls which may be sharp enough to cut the elastic cord 4' to breakdown.

Efforts have been made to solve the above problems, for example, in some art, the elastic cord 4' is separated into several parts and metal chains are used to connect them. The places where the metal chains interconnect the shafts are measured to ensure the metal chains, not the elastic cord 4', to be exposed to the outside when the shafts are collapsed. The metal chains surely have good abrasive resistance, but it takes a high cost with the material and is not easy to be processed.

### BRIEF SUMMARY OF THE INVENTION

It is an object of the present invention to provide a collapsible tentpole which is able to protect the elastic cord from the abrasion or break and has a low processing cost.

10       The present invention adopts the following technology:

A collapsible tentpole comprising: a series of hollow shafts connected by insertion into each other; and an elastic cord arranged in the shafts with both ends secured to the two endmost shafts, wherein at least one groove is arranged on at least one end of the shaft.

15       One or more sleeve tube is secured to one end of one shaft, and the said grooves are arranged on one end of the said sleeve tube.

The said at least one groove is shaped into smooth arc configuration.

The end of a shaft or a sleeve tube is of wave configuration and the wave bottom of which forms the said at least one groove.

20       The ring end of the shaft or the sleeve tube is diagonal, and the bottom of the diagonal ring end together with the hollow interior of the shaft or the sleeve tube forms the said at least one groove.

The said at least one groove is a two-section groove with an upper section including two downwards extending arcs and a lower section including two grooves that extend downwards from the bottom of the upper section

The number of the said at least one groove is 2-6.

5 Compared to existing technology, the present invention can protect the elastic cord 4 from the abrasion or break by the external or gravity force by arranging grooves on at least one end of the shaft. In addition, the process is easy and the cost is low.

### BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will be described with greater specificity and detail  
10 through the use of the accompanying drawings, in which:

Figure 1 is a perspective view of a conventional collapsible tent;

Figure 2 is an exploded view of two shafts of the conventional collapsible tent shown in Figure 1, illustrating the two shafts in separated position;

Figure 3 is a solid view of the collapsed shafts of the conventional  
15 collapsible tent;

Figure 4 is an exploded view of a first embodiment of the present invention;

Figure 5 is a solid view of the collapsed first embodiment of the present invention shown in Figure 4;

20 Figure 6 is a solid view of a first groove of the present invention;

Figure 7 is a solid view of a second groove of the present invention;

Figure 8 is a solid view of a third groove of the present invention;

Figure 9 is solid view of a fourth groove of the present invention;

Figure 10 is an exploded view of a second embodiment of the present invention.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

With reference to Figure 4, the collapsible tentpole 1 in the present invention has the same technology as the existing art that comprises a series of hollow shafts connected by insertion into each other; the said shafts are made of high strength composite tube. To achieve the inter-insertion, a sleeve tube 3 is secured to one end of a shaft, and an elastic cord 4 with both ends secured to the two endmost shafts is disposed inside the hollow shafts, as a result, the hollow shafts could insert into each other securely. However, the different is:

At least one groove 5 which can receive the elastic cord 4 is arranged on at least one end of the shaft. The groove 5 could be square shape, arc shape or any other suitable shape, and the depth and shape of the groove 5 are designed to receive the elastic cord 4 completely.

When folding the collapsible tentpole, as referenced to Figure 5, the shafts are separated and folded, and the elastic cord 4 is disposed within the groove 5 at one end of each shaft, thus the tentpole 1 is collapsed into a shorter and smaller form. When the folded shafts are disposed straightly on the ground, the elastic cord 4 will not get worn because of the elastic cord 4 is hidden inside the groove 5 without being exposed beyond the groove 5.

The said groove 5 of the present invention may be arranged on one end of a shaft, also may be arranged on both ends of a shaft. Especially, regarding a shaft

with a sleeve tube, the groove 5 may be arranged on the end of the sleeve tube.

One skilled in the art will recognize that the shape and number of the groove 5 can be various as long as the groove receives the elastic cord completely and supplies protection to the elastic cord. Accordingly, the scope of the invention is  
5 not intended to be defined by the shape, figuration and number of the groove. Below take the sleeve tube 3 as an example to describe the groove in different forms:

With reference to Figure 6, the grooves 5A are two smooth arc grooves between which there are smooth transition portions. The arc grooves 5A cover the most of the end surface of the sleeve tube, so there are only two end points extending  
10 from the grooves 5A onto the end surface of the sleeve tube. The said end points are shaped into smooth arc to avoid being too sharp to cut the elastic cord 4, thus, the end portion of the sleeve tube forms the wave shape. When the shafts of the tentpole 1 are folded, the elastic cord 4 will not locate at the two end points of the end surface of the sleeve tube, but easily slide to the bottom of the two arc grooves 5A and locate  
15 thereat. Thus, the elastic cord 4 is in protection.

With reference to Figure 7, the ring end of the sleeve tube 3 is diagonal. The bottom of the diagonal ring end together with the hollow interior of the sleeve tube forms the groove 5B which acts the same performance with the above described grooves 5A. The groove 5B is also one groove figuration with the scope of the  
20 present invention. In addition, the diagonal surface may be flat or curved.

With reference to Figure 8, several grooves 5C (preferably 2-6 grooves, 6 grooves are shown in Figure 8) are arranged on the ring end of the sleeve tube 3, when the shafts of the tentpole 1 are folded, the elastic cord 4 will automatically slide into a adjacent groove 5 so that the folding operation may be more convenient.

With reference to Figure 9, the groove 5D is a two-section groove in which the upper section includes two downwards extending arcs and the lower section includes two grooves that extend downwards from the bottom of the upper section. The arcs of the upper section lead the elastic cord 4 to the bottom. And the  
5 grooves of the lower section are seized to securely receive the elastic cord 4 so that the elastic cord 4 will not move out or get worn.

The groove 5 of the present invention can also be applied to metal shafts with thinner wall. With reference to Figure 10, the tentpole 1 is made of Aluminum; a sleeve tube 3 is secured to one end of a shaft to achieve the inter-insertion among  
10 shafts. The sleeve tube 3 is partly inserted into one end of a shaft and secured thereat, and the groove 5 is arranged on one end or both end of this shaft. The figuration and number of the groove 5 can be the same as above described.

To sum up, the present invention can protect the elastic cord 4 from the abrasion or break by the external or gravity force by arranging grooves on at least  
15 one end of the shaft. In addition, the process is easy and the cost is low.

The present invention may be embodied in other specific forms without departing from it spirit or essential characteristics. The described embodiments are to be considered in all respects only as illustrative and not restrictive. The scope of the invention is, therefore, indicated by the appended claims rather than by the foregoing  
20 description. All changes which come within the meaning and range of equivalency of the claims are to be embraced within their scope.